Update Bulletin No. 400


Jim Dulley

Thank you for your interest in writing to me about portable electric power pack supply sources. I used and researched several of the various models available. They are excellent for emergencies (such as power outages during storms) and for recreational and home use. If you need to run a standard saw, trimmer, etc., out in your yard or in the woods, these power packs can handle this for you. I use one for backup power for my pellet/corn stove in emergency power outages.

All of the power packs use 12-volt batteries. They are all sealed lead acid batteries that require no maintenance and will not leak. Clore Automotive uses an absorbent glass matt type of battery that can be used in any position. Most standard batteries, even sealed ones which do not leak when they are knocked over, generally should be used in an upright position.

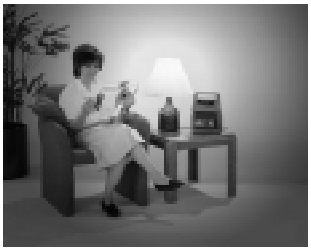
The amount of power that a power pack can provide is determined by how much electric energy can be stored in the battery. The battery storage capacity is measured in ampere-hours (amp-hrs). In simple terms, this means how much electric current (amps) that it can provide for how many hours. If a battery has an 18 amp-hr rating, it can provide 18 amps for one hour or one amp for 18 hours or six amps for three hours. The smallest, super-lightweight models have only seven amp-hour batteries and the most powerful ones have 96 amp-hours. All of the ones I listed have plenty of power to start a car with a dead battery.


Portable units power TV

There are many 12-volt DC (direct current) appliances available at most camping and outdoor equipment shops. You plug these into the 12-volt socket on the power pack. The socket is usually a basic car cigarette lighter socket. If your power pack needs recharging, you can plug it into your car cigarette lighter as you drive and it will recharge in several hours.

Standard household items, TV's, radios, clocks, lights, etc., operate on 115-volt AC (alternating current). In order to convert the 12-volt DC battery power into 115-volt AC power, an inverter is needed. Three of the manufacturers (Black & Decker, Xantrex and National Solar) have built-in inverters so that you can just plug any standard appliance into the side of the power pack. The others offer optional inverters that either plug into the power packer 12-volt cigarette lighter-style socket or snap onto the back. If you plan to use the power pack mainly for 115-volt applications, then the built-in inverter is convenient. The advantage of a separate inverter is that you can plug it into your car cigarette lighter socket and operate a TV or computer in your car. Pay attention to the maximum wattage output of the inverter so you do not exceed it in use to it may overheat.


Lightweight Jump-it on a boat


Portable units power lights

All of the units I have listed on pages one and two are of excellent quality. The models that are about 20 amp-hours and less provide plenty of emergency power and are ideal for portability (attractive, easy-to-carry cases). The heavier, higher capacity models are often used with stationary solar or wind generation systems, but they will provide a lot of electricity for an extended emergency period.

The prices vary from about $30 to more than $150 depending upon the maximum battery and inverter output. Vector sells remanufactured models online for the lowest cost, but they do not have built-in inverters. The Black & Decker Electromate 400 is one of the nicest models with convenient controls and handle for carrying. Its suggested retail price is $99.

Jim

Selected Manufacturers of Portable Battery/Inverter Power Packs

BLACK & DECKER, 626 Hanover Pk., Hampstead, MD 21074 - (800) 544-6986 www.blackanddecker.com

model - "Electromate 400" | nominal voltage - 12 volts dc | battery pack type - sealed lead acid
battery power - 19 amp-hours | weight - 21 lbs. | size - 17" L x 7" D x 11" H
charging time - 24 hours with adapter plugged into 115-volt house outlet, 4-6 hours from car cigarette lighter
features - The Electromate 400 has two 115-volt alternating current AC outlets and two 12-volt direct current DC outlets. The maximum AC output is 400 watts and the maximum DC outlet, through the jumper cable connector is 450 amps for five seconds. This includes a tire pump which a pressure gauge up to 120 psi which is enough for racing bicycle tires. It also has an indicator light for testing the alternator in your car. There is reverse polarity protector in case you connect the jumper cables to the incorrect battery terminals. The LED work light is very useful on this model and LED's are the more efficient light source so it will not run down the power very much. The 115-volt charger is built into the case so you do not have to keep track of a separate charger (transformer). B&D also makes a smaller model with a built-in light, radio and TV sound, and also offers several inverters.

CLORE AUTOMOTIVE, 8735 Rose Hill Rd. #220, Lenexa, KS 66224 - (800) 328-2921 www.jumpstarter.com

model - "Jump-N-Carry" Model 4000 | nominal voltage - 12 volts dc | battery pack type - sealed lead acid
battery power - 17 amp-hours | weight - 18 lbs. | size - 12" L x 7" D x 11.5" H
charging time - 2 hours from car cigarette lighter socket, 18 hours with adapter plugged into 115-volt house outlet
features - The Model 4000 is a compact unit designed for jump starting cars, but can also be used for emergency and recreational activities. It uses an Absorbent Glass Matt battery that allows unit to be used in any position. It is a bright red color with a built-in emergency spotlight. This can be handy when you experience trouble with your car. The 17 amp-hour battery will power the light for a very long time. The battery has enough power to jump start many cars. It has 29-inch long jumper cables that clamp onto the case for easy storage. With an inverter plugged into the Model 4000, you can plug any standard 115-volt AC device into it. This unit has a very durable solid insulated polyethylene plastic case. They also make some other very powerful models with a battery power up to 44 amp-hours.

ENERTECH INTERNATIONAL, 905 Armstrong, Algonquin, IL 60102 - (888) 841-5179

model - "Power Tank" nominal voltage - 12 volts dc battery pack type - sealed lead acid
battery power - 7 amp-hours, 12 amp-hours weight - 9.7 lbs. size - 7.4" L x 3.5" D x 8.6" H
charging time - 6 hours from car cigarette lighter socket, 15 hours with adapter plugged into 115-volt house outlet
features - The Power Tank is available in two power output models - PT-10/100 with 7 amp-hour and PT-200 with 12 amp-hour. These models are unique in that they have a built-in bright efficient fluorescent light in the front of the unit. This is ideal for camping and other recreational activities. For emergencies, the light has a two-way switch that provides a flashing red warning or a concentrated white light that can be easily spotted. The PT-100 model includes battery jumper cables that are built into the sides of the unit for ease in accessibility. They can be used to help start a boat, jet ski, farm equipment, or car. All models include an internal circuit breaker that will protect the unit from excessive electrical power draw. This is similar to how your home circuit breakers protect your house wiring. Inverters will be available soon.

NATIONAL SOLAR TECH., INC., 166 Taylor Blvd., Depew, NY 14043 (800) 310-7413 www.nationalsolaronline.com

model - "En-R-Pak" (built-in inverter) nominal voltage - 12 volts dc battery pack type - sealed lead acid
battery power - 100 amp-hours weight - 85 lbs. size - 17" L x 12" D x 15.5" H
charging time - 6 hours from car cigarette lighter socket, 15 hours with adapter plugged into 115-volt house outlet
features - En-R-Pak 200 is designed to be used with wind or solar power, but it can also be used as back-up electric power for emergencies. It is one of the most powerful units available with 96 amp-hours of storage. It is powerful enough to provide 200-watts for 115-volt AC devices (pure sine wave) while simultaneously providing 150 watts of DC power for another appliance (such as camping equipment or other items that run on DC voltage). All the necessary electronics are built-in, to store, control and produce electricity from the sun, wind or flowing water. The unit is configured to accept additional solar panels, wind or water turbines. Therefore, you may add any of these items at any time. They provide many other kits that include solar panels and windmill generators.

VECTOR MANUFACTURING LTD., 4140 SW 28th Way, Ft. Lauderdale, FL 33312 (866) 584-5504 www.vectormfg.com

model - "Jumpstarter" series nominal voltage - 12 volts dc battery pack type - sealed lead acid
battery power - 9 to19 amp-hours weight - varies size - varies
charging time - 6 hours from car cigarette lighter socket, 15 hours with adapter plugged into 115-volt house outlet
features - Can be used to quickly and easily start any vehicle. Several of the models have a built-in emergency light and an air compressor/tire inflator. See details of several of the Jumpstarter models below. These models are convenient to use because many of them have self-storing jumper cables. Vector also offers a complete line of inverters that can be connected the Jumpstarter models to produce 115-volt power.

XANTREX, 8999 Nelson Way, Burnaby, BC, Canada V5A 4B5 (800) 670-0707 www.xantrex.com

model - "XPower Powerpack 300 Plus" nominal voltage - 12 volts dc battery pack type - sealed lead acid
battery power - 20 amp-hours weight - 20 lbs. size - 12.5" L x 5.1" D x 11.8" H
charging time - 4 hours from car cigarette lighter socket, 40 hours with adapter plugged into 115-volt house outlet
features - Unit provides 300 watts of 115-volt household electricity. The XPower Powerpack 300 Plus can be used to jumpstart a car or the built-in air compressor with the nozzle adapters can pump air into tires or sports or camping equipment. There is a built-in fluorescent light that provides illumination in emergency situations for up to 25 hours. The unit also features a battery level meter that allows for easy battery status monitoring. Accessories include jumper cables, nozzle adapters, AC and DC charging cables, and an accessory bag. The jumpstart cables measure 39." The XPower Powerpack 300 Plus can also operate electronic equipment such as laptops for six hours, a portable stereo for 17 hours, and a cordless phone for up to 40 hours. Also see page four for information on the Jazz Inverter that provides 120 watts continuous, 300 watts surge.

Emergency Jumpstarters by Vector Mfg.

Features:

- Automatic on/off power control ensures safety and resists sparking
- Clamps power-on only with proper polarity connection
- 12 volt DC portable power outlet for DC accessories and appliances
- Rechargeable from home or vehicle
- Ideal for emergencies in remote locations
- Microprocessor control (Digital Smart Control)
- High frequency power conversion technology
- Three stage automatic rapid charging battery charger

VEC012B-Jump'N Charge

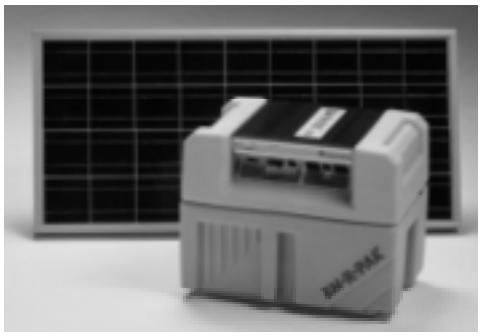
- Short circuit and reverse polarity protection (no spark) for user
- 26" heavy-duty welders type cable and clamps
- Lightweight, high efficiency design
- High-density, 19Ah sealed, non-spillable battery
- Ultra bright 3 LED emergency worklight
- Cables and clamps self-stored
- Digital display battery diogostics

Features:

- It can also be used with other Vector 12 volt DC cordless, portable, rechargeable appliances rated at 12 amps maximum
- An accessory outlet is provided for use with appliances that are compatible. The DC accessory outlet also allows for DC recharging from a vehicle or other 12 volt source.
- Twin LED area light (located on the center of the control panel) will provide proper lighting while changing a tire of connecting the Compact Elite to a battery. Area light can operate continuously for 50 hours on a fully charged battery.
- Cordless/rechargeable, includes AC and DC charging adapters
- Includes non-spillable, heavy duty, 9 amp hour, sealed, lead-acid battery
- Cable storage channels that keep jumper cables out of the way

VEC010S Start-It Compact Elite

En-R-Pak by National Solar Technology (shown with optional solar panel)



The En-R-Pak 200 will control and store power from a car battery, household power, solar panels, and a wind or water turbine. It uses the stored energy to output 115 volts (pure sine wave A/C) and 12 volts DC. A 230 volt (50 Hertz or 60 Hertz) unit is available for international use.

No assembly is required. All of the electronics and gel cell batteries are built into one unit. There are no wires to connect, no part drawings to decipher and no set-up headaches. Your unit arrives charged and ready to use. All you do is point the solar panel south, plug the prewired cable connections into the power center and you will be producing your own electrical power. Expansion Chassis (pictured on the left) is an optional portable unit that has another built-in battery and control circuits for an additional 100 amp hours of storage. A charge cable is included.

Inverters by Black and Decker

The MaxxSST ™ 750-watt Power Inverter (below top) converts 12 volt DC power into 115 Volt AC household power and features dual AC outlets. It's easy to use, just connect directly to your vehicle's battery and power up your TV, power tools and other small appliances. Designed for life on the go and engineered for safety, durability, and reliability. Built strong to last and equipped with advanced Soft Start Technology®, for added reliability. A smaller 100-watt model which plugs into a cigarette lighter is also shown (below bottom).

FEATURES:

- Powers up to 6.52 amps (750 watts)
- 1500 Watt high surge peak
- Dual AC outlets
- Overload protection
- Short circuit protection prevents damage
- Ground fault interrupter circuit
- MAXX SST ™ Soft Start Technology®
- Noise filter technology
- Turbo cooling
- High and low voltage protection
- Low battery alarm and shut down
- LED power and fault indicators
- Heavy duty battery clips and cable set included
- Built-in mounting bracket

XPower Powerpack 300 Plus by Xantrex

The XPower Powerpack 300 Plus is powered by a rechargeable battery and can provide up to 300 watts of AC power to jumpstart a car, truck, boat, or small RV. The unit also includes a built-in air compressor for inflating tires, sports equipment and camping gear.

It includes jumper cables that are designed for safe and efficient jump starting. There is a battery level meter that allows you to easily monitor the battery status.

The two four-watt emergency fluorescent lights provide light for up to eight hours. An audible alarm signals if the unit overheats or if under voltage occur. This system is also available without the air compressor feature - XPower Powerpack 300.

Electromate 400 by Black and Decker

The Electromate 400 offers 450 amps of instant starting power, 400 watts of portable 115-volt power supply, and a built-in inflator perfect for inflating vehicle tires and sports equipment.

Use the 12 volt DC and 120 volt AC outlets to power your cell phone, laptop, video game console, TV/DVD, small household appliances and more. It's also a safe and easy way to jump-start your car, truck or boat battery.

You can use the Electromate 400 over and over again with proper recharging. Plug a standard household extension cord onto the Electromate for automatic AC charging until the LED display indicates 'FULL' charge (can also be recharged using 12 Volt DC accessory outlet).

FEATURES:

- 450 Amp instant vehicle starting power
- 400 Watts of portable 115-volt AC power
- Built-in 12 volt DC outlet to power and/orrecharge DC appliances
- Inflator for vehicle tires or sports equipment
- Keyless on/off safety switch
- Vehicle alternator check
- LED battery status indicators
- Built-in LED emergency worklight
- Heavy-duty cable and clamp set and 12 volt DC car cord included
- Universal inflator adapter and nozzle set included

SPECIFICATIONS:
Power: 400 watts continuous
Voltage: 120 V AC RMS
Frequency: 60 Hz + 4 Hz
Waveform: Modified sine wave
Protection: Overload, overheating, short circuit
Model #: VEC026BD

Warranty: 2-year limited Warranty

Jazz Inverter by Xantrex

"Freedom Jazz Inverter" - Provides 120 volt AC current from 12 volt DC current wherever it is needed. Portable power and easy to install advanced series power. Capacities range from 50 to 2,500 watts to power almost any appliance.

High efficiency, compact design, High/Low voltage protection circuitry protects the inverter whenever input voltage exceeds 15 volts DC or less than 10.5 volts DC. Thermal Cutoff automatically shuts inverter down if internal temperature exceeds standard design parameters for safe operation

When sizing your inverter, simply calculate the highest total wattage needed at any one time and choose the closest inverter with a higher output. For practical application, most people operate only one or two major appliances at a time. Start up watts should be considered where appropriate.

Preparing for Emergencies

There are many items you should have in your automobile and things you should do to be prepared for an emergency.

- Even if you are at home when a disaster strikes, and your home is well stocked, you may still need the supplies in your car. Your house may not be safe to enter, or may catch fire after a natural disaster such as an earthquake.
- Your car will be one of the most important resources after a disaster strikes. Keep it mechanically sound and pay close attention to the exhaust system. A leaking exhaust system could kill.
- Always make sure you keep your gas tank full. Fill it when it is half empty. You will thank yourself the first time you are stuck in a traffic jam during bad weather.
- Think of your car's trunk as an extra large supply cabinet. Keep your supplies in the trunk along with other important items such as tools, jumper cables and a spare tire.
- Keep the car mechanically sound and ready to use.
- Keep supplies in the car for use in an emergency.
- Replace your battery every five years. In an emergency, your car battery needs to run the radio and heater for extended periods.

Have a mechanic check the following items on your vehicle to keep it ready for an emergency: battery, antifreeze, wipers and windshield washer fluid, ignition system, thermostat, lights and flashing hazard, exhaust system, heater, brakes, defroster, tire pressures and treads

To prevent car batteries from becoming a problem, perform regular routine maintenance on the battery. Maintaining the correct electrolyte levels, tightening loose hold-down clamps and terminals are maintenance batteries require. Additionally, removing corrosion and checking the alternator belt tension are also preventative maintenance steps required for a battery.

The frequency you perform these steps depends on your climate and battery type, but you should perform at least once before cold weather starts and once a month during hot weather.

If the electrolyte levels are low in non-sealed batteries, add distilled water to the level indicated by the battery manufacturer or to 1/8" below the bottom of the filler tube. Try not to overfill, especially in hot climates.

12-volt DC Automotive/Marine Accessories (for 20 amp-hr unit)

Appliance	*Typical Current Draw*	*Estimated Time Fully Charged Unit*
Air compressor	7 amps	1 hour
Bilge pump	3 amps	3 hours
Car vacuum	7 amps	1 hour
Cellular phone	0.5 amps	30 hours
Depth finder	0.5 amps	30 hours
Electric cooler	2.5 amps	4 hours
Fluorescent lights	0.4 amps	40 hours
12-volt radio	2 amps	5 hours
12-volt TV (9 inch)	5 amps	2 hours
Spot lights	8 amps	1 hour

115-volt AC Household Electrical Appliances (for 20 amp-hr unit)

Appliance	*Typical Wattage Consumptiom*	*Estimated Time Fully Charged Unit*
Camcorder	5 watts	40 hours
Laptop computer	22 watts	6 hours
Desktop computer	135 watts	2 hours
Fan	15 watts	10 hours
Fax machine	135 watts	2 hours
Printer	135 watts	2 hours
Radio	9 watts	21 hours
Spot Light	100 watts	1.5 hours
Sump pump	100 watts	1.5 hours
Cash register	30 watts	4 hours
Electric pad	45 watts	*16 hours
Security Alarm	5 watts	40 hours
Fluorescent light	13 watts	10 hours
40-watt light bulb	40 watts	3 hours
Clock radio	8 watts	22 hours
Television (5 inch color)	20 watts	6 hours
* Based on intermittent on-time due to thermostat		

** Suppliers of PV Solar Charging Panels*	*** Suppliers of Windmill Charging Systems*
ASTRO POWER, 461 Wyoming Rd., Newark, DE 19716	**AEROMAX CORP.,** 9520 E. Lorna Ln., Prescott Valley, AZ 86314
BP SOLAR/SOLAREX INC., 2300 N. Watney Way, Fairfield, CA 94533	**ATLANTIC ORIENT**, Farrell Farm Rd. Rt. 5, Norwich, VT 05055
EVERGREEN SOLAR, 259 Cedar Hill St., Marlboro, MA 01725	**BERGEY WINDPOWER**, 2001 Priestley, Norman, OK 73069
KYOCERA AMERICA, 7812 E. Acoma Dr., Scottsdale, AZ 85260	**LAKE MICHIGAN WIND**,1015 C.R. U, Sturgeon Bay, WI 54235
NORTHEN ARIZONA WIND & SUN, 2725 Larkin Dr., Flagstaff, AZ 86004	**SOUTHWEST WINDPWR.**, 2131 North First St., Flagstaff, AZ 86004
SIEMENS SOLAR INDUS., 4650 Adohr Ln., Camarillo, CA 93011	**WIND GENERATOR PROD.**, 1423 SW 1st Ave., Ft. Laudredale, FL 33315
SUNELCO, PO Box 787, Hamilton, MT 59840	**WIND TURBINE**, 16801 Industrial Cir. SE, Prior Lake, MN 55372
TERRASOLAR, INC., 44 Court St., Brooklyn, NY 11210	**WINDSTREAM POWER**, PO Box 1604-HP, Burlington, VT 05402
UNITED SOLAR SYSTEMS, 3800 Lapeer Rd., Auburn Hills, MI 48326	**WINDTECH INTN'L.**, PO Box 27, Bedford, NY 10506
* Update Bulletin #450 has a full buyer's guide of PV solar systems	** Update Bulletin #485 has a full buyer's guide of windmill systems

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